MEETING NOTES

200 West Tank Farms Interim Measures Investigation Work Plan
and
241-TX Tank Farm Sampling and Analysis Plan

MEETING DATE: January 16, 2013

LOCATION: Washington State Department of Ecology, Richland Office

ATTENDEES:

Mike Barnes (Ecology)	R.D. Hildebrand (DOE)
Joe Caggiano (Ecology)	Dan Parker (WRPS)
Mike Connelly (WRPS)	Julie Robertson (Freestone Environmental Services)
Susan Eberlein (WRPS)	Maria Skorska (Ecology)
Les Fort (WRPS)	Harold Sydnor (WRPS)
Dan Glaser (WRPS)	Cindy Tabor (WRPS)
Erika Garcia (Freestone Environmental Services)	

PURPOSE: This meeting was scheduled to provide a forum to discuss Ecology comments on *200 West Area Tank Farms Interim Measures Investigation Work Plan* (RPP-PLAN-53808, Revision 0) and also to introduce Ecology to the *Sampling and Analysis Plan for Soil Samples in Support of Interim Measure Planning at the 241-TX Tank Farm* (draft in preparation). **NOTE**: Following the meeting of January 16, 2013, the participating agencies agreed to participate in follow-on meetings to occur on an approximately monthly basis. A list of open and unresolved issues and the status of those issues will be tracked and documented in the notes of these meetings in the form of action items and pending resolutions.

DISCUSSION:

TX Farm SAP

Ms. Tabor provided a presentation describing the contents of the draft TX SAP (Attachment 1). Key discussion points are summarized below.

- The SAP will reference RPP-54073, *TX Tank Farm Leak Inventory Assessment Meeting Summaries*, regarding leak assessment information.
- The outline and content of the TX Farm SAP closely follow the outline and content of RPP-PLAN-49132, *Field Sampling and Analysis Plan for Soil Samples in Support of an Interim Barrier at S Farm*.
- The direct push investigation will initially focus on eight locations as agreed during meetings held on September 6 and September 18, 2012. The locations of an additional four direct push boreholes will be determined following review by DOE and Ecology of available results from the initial eight locations. The interagency agreement on the final four borehole locations will be documented in meeting minutes that will be placed in the Administrative Record associated with the *Hanford Federal Facility Agreement and Consent Order* (HFFACO). The methodologies to be used and

analytes will be the same for the final four boreholes as the first eight, as documented in the TX Farm SAP.

- Ecology asked whether available results from three boreholes installed in 1982 near TX-104, TX-105, and TX-106 were considered when locations were selected for the first eight boreholes. WRPS confirmed that data from those boreholes was considered during the selection process.
- Mr. Sydnor noted that during recent driller walk downs at TX Farm, it was concluded that drilling equipment accessibility issues preclude installation of a borehole at alternative site 1A. Additionally, there is significant underground infrastructure at alternative site 1C that precludes use of that location. Therefore, the site previously identified as alternative site 1B will be selected for borehole installation. **ACTION**: The body of the TX Farm SAP will be written to eliminate discussion of 1A/1B/1C and will simply identify the former site 1B as "Site 1."
- Sample depth locations will be selected as described in the attached presentation. Sample depth agreement meetings will be signed by DOE and Ecology and placed in the Administrative Record.
- Soil samples will be analyzed for constituents as shown in the presentation. The list excludes sulfide and identifies four analytes for quick-turn analysis (bold text). Levels of constituents shown in italicized text will be reported if they are detected.
- WRPS and DOE stated an intent to provide Ecology with a copy of the draft SAP in mid-February for informal review in the hopes that any significant issues could be identified and worked before the document is issued formally.
- Ecology stated that HFFACO text regarding data validation appeared to have been modified recently and that those changes might necessitate modification of the data validation text used in the SAP. **ACTION**: Ms. Tabor will follow-up with Mr. Barnes and Jerry Yokel (Ecology) to prepare data validation text.

200 West Interim Measures Work Plan

- Ms. Eberlein noted that per HFFACO primary document review requirements, Ecology's comments on the work plan (RPP-PLAN-53808, Rev. 0) must be provided by January 24, 2013. The parties discussed several options that could be used to fulfill this requirement, including provision of a formal letter and inclusion of the comments in the meeting minutes for the HFFACO monthly project managers' meeting scheduled for January 22, 2013. **ACTION**: Ecology staff will relay options to the Ecology project manager for his consideration.
- Ms. Tabor handed out a table listing informally-provided Ecology comments on the Rev. 0 work plan, along with potential resolutions. The parties discussed a limited number of comments they deemed higher priority, as described below:
  - Comments requesting inclusion of text and a new figure regarding tank Tc-99 inventory – WRPS agreed to include the requested text and provided a new figure illustrating contaminant inventories in the single-shell tanks. Ecology agreed the figure should be added.
  - Comment requesting additional 3D resistivity information – WRPS agreed to incorporate the requested information.
  - Comment requesting the document be updated to incorporate the latest tank system descriptions and tank leak loss values – WRPS agreed to incorporate the requested information.

ACTION: Ms. Tabor will update the table handed out at the meeting to reflect the discussion and will email it to Ecology for their use as desired to meet the HFFACO timeline to formally provide comments on the work plan by January 24, 2013.

ACTIONS: Refer to the following table. A date-based numbering system is being used to track the actions to completion. Actions will be removed from the list after DOE and Ecology have agreed to their completion.

R Douglas H. Idebrand	R [signature]	2-6-2013
DOE Project Manager (print)	DOE Project Manager (signature)	Date
Jeffery J Lyon	[signature]	2-11-2013
Ecology Project Manager (print)	Ecology Project Manager (signature)	Date

Item #	Topic/Title	Actionee	Description	Status
2013-01-16-1	Identification of TX Farm borehole site 1	Tabor	Update draft TX Farm SAP to eliminate discussion of 1A/1B/1C and simply identify the former site 1B as "Site 1."	(new)
2013-01-16-2	SAP data validation text	Tabor	Follow-up with Mike Barnes and Jerry Yokel to prepare SAP data validation text.	(new)
2013-01-16-3	Formal documentation of Ecology comments on work plan by 1/24/2013	Skorska	Discuss options for documenting Ecology comments with Jeff Lyon.	(new)
2013-01-16-4	Ecology comments on work plan	Tabor	Update table with Ecology comments on work plan and proposed resolutions.	(new)

Proposed TX Farm Interim Measure Sampling and Analysis Plan

- Purpose of SAP
- SAP Reference Materials
- Sample Locations
- Sample Depth Decision Process
- Analytical Constituents
- Schedule

Purpose of the TX SAP

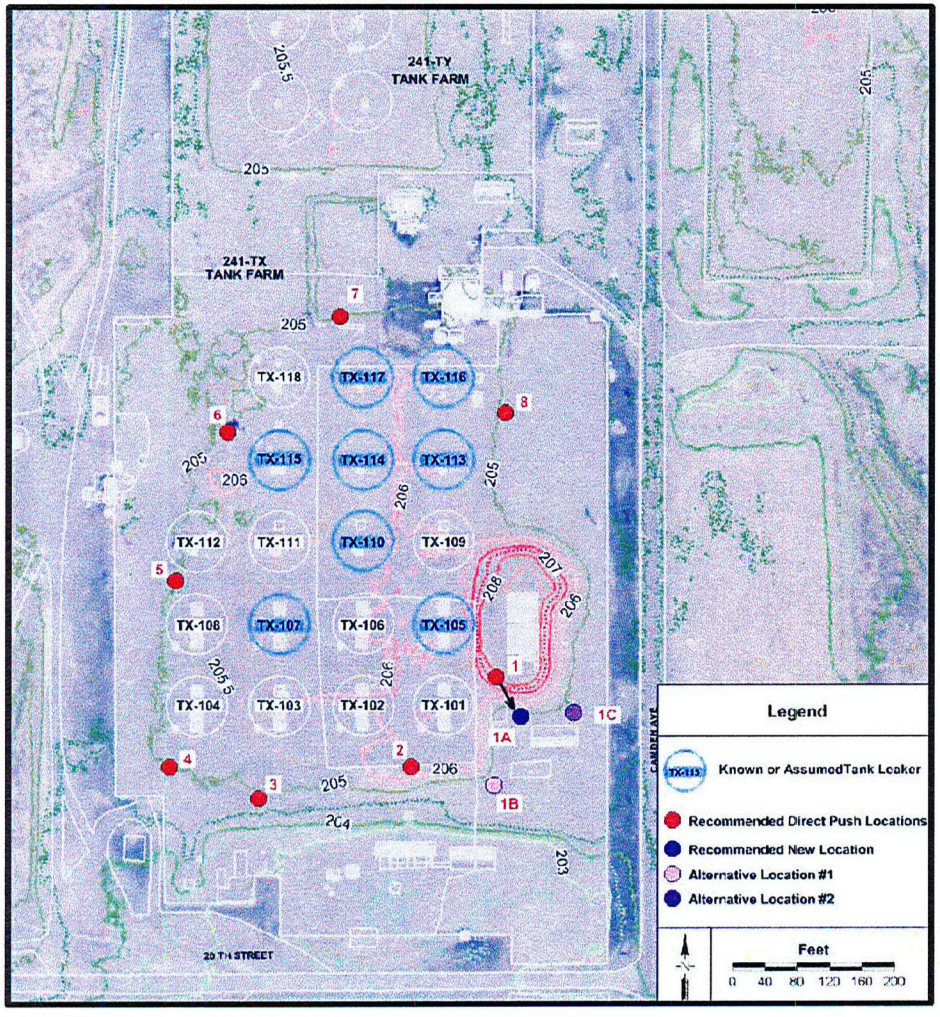
- Document sampling and analysis activities necessary to assist in determining
  - If an interim measure is merited at TX Farm
  - Geographic extent of vadose contamination at TX Farm
- Implement RPP-PLAN-53808, *200 West Area Tank Farms Interim Measures Investigation Work Plan*
- Fulfill Tri-Party Agreement Milestone M-045-21 (submit SAP) and gather data to support Target Date M-045-22-T01 (submit characterization report)
- Inform future RCRA Phase 2 characterization activities at TX Farm

TX Farm SAP Reference Documents

The following references are being used to develop the TX Farm SAP:

- RPP-43551, *Tank Farm Interim Barrier Data Quality Objectives*
- RPP-PLAN-53808, Interim Measures Investigation Work Plan
- RPP-23752, the T and TX-TY Field Investigation Report
- RPP 54073, *TX Tank Farm Leak Inventory Assessment Meeting Summaries*
- RPP-PLAN-49132, *Field Sampling and Analysis Plan for Soil Samples in Support of an Interim Barrier at S Farm*
- Minutes from September 6 and September 18, 2012 meetings regarding TX vadose zone sampling
- RPP-ENV-53773, *Data Requirements for Characterization Supporting Interim Measures in TX Farm*

Proposed Borehole Location Map



Hanford Site 200 West Area,
241-TX Tank Farm

Information based on September 18, 2012 field walk down.

Direct Push Location Strategy for TX Farm

- Push boreholes in 8 locations:
  1. SE of TX-105/E of TX-101 (further assess tank TX-105 and UPR-200-W-100 releases) – 1A
  2. SW of TX-101 (further assess releases near TX-105 and UPR-200-W-100)
  3. S of TX-103 (gather additional data on contamination south of the TX Farm tanks)
  4. S of TX-104 (gather additional data on contamination south of the TX Farm tanks)
  5. Between TX-108 and TX-112 (explore SGE anomaly)
  6. Between TX-115 and TX-118 (explore SGE anomaly)
  7. N of TX-117 (gather data near tank of questionable integrity)
  8. E of TX-113 and TX-116 (gather data near tanks of questionable integrity)
- Push boreholes in 4 additional locations TBD based on results from initial 8 locations

Sample Depth Decision Process

- Soil samples will be collected consistent with previous interim barrier support efforts
  - An average of three depths from each sample probe hole.
  - Geophysical logging and available quick turnaround analysis (^{99}Tc and nitrate) will be used to aid in determining sample depths.
  - Meetings will be held with, or e-mails will be sent to, representatives from WRPS, DOE, ORP, DOE-RL, and Ecology, to gain a consensus on sample depths.

Analytes Selected for the TX Farm Interim Measure Direct Push

Primary Analytical Method (prep)	Constituent
9045	**pH**
9050	**Conductivity**
6010 ICP/AES	Aluminum, Barium, Beryllium, Calcium, Chromium, Copper, Iron, Lead, Lithium, Manganese, Magnesium, Molybdenum, Phosphorous, Potassium, Sodium, Strontium, Zinc, *Boron, Bismuth, Cerium, Europium, Lanthanum, Neodymium, Niobium, Palladium, Praseodymium, Rubidium, Rhodium, Ruthenium, Samarium, Silicon, Tin, Sulfur, Tantalum, Tellurium, Thorium, Titanium, Tungsten, Yttrium, Zirconium*
6020 ICP/MS	Antimony, Arsenic, Cadmium, Cobalt, Nickel, Selenium, Silver, Thallium, Uranium, Vanadium
7471 Cold vapor atomic absorption	Mercury
9056 Ion chromatography	Fluoride, Nitrite, **Nitrate**, Chloride, Sulfate, Acetate, Formate, Glycolate, Oxalate, *Bromide, Phosphate*
Ion chromatography EPA 300.7	Ammonium
9014 Spectrophotometric	Cyanide
Gamma energy analysis	Cesium-137, Cobalt-60, Antimony-125, Europium-152, Europium-154, Europium-155, Thorium-228, Thorium-234
Low energy gamma counting	Iodine-129
ICP/MS	**Techenetium-99**, Tin-126, Uranium-233, Uranium-234, Uranium-235, Uranium-236, Uranium-238, Neptunium-237, Thorium-230, Thorium-232
Liquid scintillation	Carbon-14, Tritium, Nickel-63, Selenium-79
Alpha energy analysis	Plutonium-238, Plutonium-239/240, Americium-241, Curium-242, Curium-243/244
Beta proportional counting	Strontium-90
Gravimetric	Percent solids
Gravimetric	Percent water
Gravimetric	Bulk density

Analytes are as proposed in September 6, 2012 meeting, except that sulfide has been deleted.

Schedule for TX Farm Work

	Fiscal Year 2013	Fiscal Year 2014	Fiscal Year 2015
241-TX Tank Farm			
Submit TX Sampling and Analysis Plan (M-045-21)	◆ March 31, 2013		
Provide Field Work Completion Summary		◆ March 31, 2014	
Provide TX Farm Interim Action Recommendations		◆ June 30, 2014	
Submit Characterization Report (M-045-22-T01)			◆ Sept. 30, 2014
Complete M-045-22 Milestone			◆ Sept. 30, 2014
Submit Change Package to Modify M-045-92 Milestone			◆ Sept. 30, 2014

Direct Push Location Strategy for TX Farm

Site #	Approximate Location	Input Factors Associated with Location[a]	Reason for Sampling with Respect to Interim Measure
1A (Agreed Upon Location – Refer to the 6th bullet in third column of this row)	Southeast of tank 241-TX-105 (TX-105)	• Tank TX-105 designated as a leaker (at least 150,000 gal) • Nearby diversion boxes and pipelines • Process records indicate it was overfilled in 1952 and between 1961 and 1964 • Gross gamma activity detected in drywells 51-05-01, 51-05-03, and 51-05-05 on East – Southeast side of tank • UPR-200-W-100 is also to the east of tank TX-105 • Direct push initial location (1) cannot be reached due to topography; three alternative sites have been identified (1A, 1B, and 1C), all further to the south but in the vicinity of transfer lines and diversion boxes. Location 1A is the preferred alternative location based on site visit dated September 18, 2012. If 1A is not accessible, then 1B will be selected, and if 1B is not accessible, then 1C will be selected.	Further assess the path and inventory of tank TX-105 and UPR-200-W-100 Releases (see Figure 2-4 for uranium plume map[b])
2 (Agreed Upon Location)	Southwest of tank 241-TX-101	• Releases associated with tank TX-105 and UPR-200-W-100 appear to be trending to the southwest (see Figure 2-4[b]) • Tc-99 groundwater plume is to the south of 241-TX Tank Farm (TX Farm) (See Figure 2-10[b])	Further assess the nature and depth of migration of releases near tank TX-105 and UPR-200-W-100; also to attempt to define a boundary for the migration
3 (Agreed Upon Location)	South of tank 241-TX-103	• Tank 241-TX-107 is designated as a leaker (1,300 gal) • Noted Co-60 and Eu-154 activity in drywells 51-07-07, 51-07-18 and in drywells between tanks 241-TX-107 and 241-TX-103 • Tc-99 groundwater plume is to the south of TX Farm (Figure 2-10[b])	Confirm Previous Results: Gather additional data to assist in determining nature and extent of contamination (i.e., Tc-99) south of the TX Farm tanks, also to attempt to define boundary to vadose zone contamination
4 (Agreed Upon Location)	South of tank 241-TX-104	• Tank 241-TX-104 is not designated as a leaker • Uranium vadose zone plume to the east and south of tank 241-TX-104, may be the result of a transfer line or cascade line leak • Tc-99 groundwater plume is to the south of TX Farm (Figure 2-10[b])	Confirm Previous Results: Gather additional data to assist in determining nature and extent of contamination (i.e., Tc-99) south of the TX Farm tanks, also to attempt to define boundary to vadose zone contamination

[a] Tank leak and pipeline failure information is provided in RPP-23405, *Tank Farm Vadose Zone Contamination Volume Estimates.*

[b] Reference figures are provided in RPP-PLAN-53808, *200 West Area Tank Farms Interim Measures Investigation Work Plan.*

Direct Push Location Strategy for TX Farm (Continued)

Site #	Approximate Location	Input Factors Associated with Location[a]	Reason for Sampling with Respect to Interim Measure
5 (Agreed Upon Location)	In between tanks 241-TX-108 and 241-TX-112 and slightly to the west of the centerline between these tanks	• Higher conductivity area based on resistivity information in this area (Figure 2-9[b])	Explore surface geophysical exploration (SGE) anomaly close to tanks 241-TX-108 and 241-TX-112. Gather data to assist in determining nature and extent of contamination (i.e., Tc-99).
6 (Agreed Upon Location)	In between tanks 241-TX-115 (TX-115) and 241-TX-118 and to the NW of tank TX-115	• Tank TX-115 was declared "questionably integrity" in 1977 based on gamma activity in drywell 51-15-04 and arbitrarily assigned a leak volume of 8,000 gal • May have been overfilled in the early 1950s • SGE anomaly to the north and northwest of tank TX-115	Explore SGE anomaly close to tanks TX-115 and 241-TX-118. Gather data to assist in determining nature and extent of contamination (i.e., Tc-99).
7 (Agreed Upon Location)	North of tank 241-TX-117	• Tank 241-TX-117 was declared "questionably integrity" in 1977 based on gamma activity nearby vadose zone drywells and arbitrarily assigned a leak volume of 8,000 gal • Tc-99 in groundwater in this vicinity (Figure 2-10[b])	Gather data to assist in determining nature and extent of contamination (i.e., Tc-99) and to attempt to define boundary to vadose zone contamination
8 (Agreed Upon Location)	East of tank 241-TX-113 and 241-TX-116	• Tank 241-TX-113 was declared "questionably integrity" in 1977 based on gamma activity nearby vadose zone drywells and arbitrarily assigned a leak volume of 8,000 gal • Historical transfer records show that the tank 241-TX-113 was filled above the cascade outlet as a result of cascade plugging of the cascade lines and in-tank photographs show the waste level was well above the cascade line, indicating the potential for releases from the cascade lines or spare inlet ports • Tank 241-TX-116 was declared "questionably integrity" in 1977 based on gamma activity nearby vadose zone drywells and arbitrarily assigned a leak volume of 8,000 gal	Gather data to assist in determining nature and extent of contamination (i.e., Tc-99) and to attempt to define boundary to vadose zone contamination

[a] Tank leak and pipeline failure information is provided in RPP-23405, *Tank Farm Vadose Zone Contamination Volume Estimates.*

[b] Reference figures are provided in RPP-PLAN-53808, *200 West Area Tank Farms Interim Measures Investigation Work Plan.*